

SOLANESOL, A POTENTIAL "TAR" BIOMARKER IN SALIVA OF CIGARETTE SMOKERS

Peyton Jacob, III, Ph.D.*, Lisa Yu, B.S. and Neal L. Benowitz, M.D., University of California, San Francisco

For many purposes, determining concentrations of nicotine or its metabolite, cotinine, in biological fluids is the most reliable means for measuring tobacco smoke intake. However, nicotine and its metabolites are not suitable biomarkers for all purposes. The way a cigarette is smoked can alter the ratio of nicotine to tar in the smoke, and can alter the relative amounts of different carcinogens. Nicotine and its metabolites also result from the use of nicotine replacement medications, which precludes their use as biomarkers in studies using these medications.

Solanesol is a high molecular weight neutral substance present solely in the particulate phase of both the mainstream smoke of cigarettes and of environmental tobacco smoke. Due to its chemical properties and high concentrations in tobacco smoke, it should be an excellent biomarker for particulate ("tar") exposure and for exposure to neutral substances such as carcinogenic polycyclic aromatic hydrocarbons.

We have found that solanesol can be readily measured in saliva using liquid chromatography - tandem mass spectrometry. Concentrations in saliva from twelve smokers averaged 45 ng/ml with a range of 0-167 ng/ml. Concentrations in saliva from six non-smokers averaged 0.6 ng/ml, range 0-1.8 ng/ml. The possible utility of solanesol and its metabolites as tar biomarkers will be discussed.

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CORRESPONDING AUTHOR: Peyton Jacob, III, Ph.D., University of California, San Francisco, Division of Clinical Pharmacology, Bldg. 100, Rm. 235, San Francisco General Hospital, 1001 Potrero Ave., San Francisco, CA 94110, USA

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